

Claims

1. A medicament dispenser device comprising

5 a housing including a dispensing outlet;

a medicament discharge device moveably housed within the housing, the medicament discharge device comprising a medicament container for storing the medicament to be dispensed and a medicament dispensing mechanism for
10 dispensing medicament from the container to the outlet;

a user operable actuator moveable with respect to the medicament discharge device to apply an actuating force to the dispensing mechanism; and

15 an actuation indicator responsive to application of said actuating force,

wherein a pre-load means is provided to said user operable actuator to prevent application of the actuating force to the dispensing mechanism and actuation indicator until a pre-determined threshold force is applied to the user operable
20 actuator.

2. A medicament dispenser device according to claim 1, wherein the dispensing outlet is in the form of a mouthpiece for insertion into an oral cavity.

25 3. A medicament dispenser device according to claim 1, wherein the dispensing outlet is in the form of a nozzle for insertion into a nasal cavity.

4. A medicament dispenser device according to any of claims 1 to 3, wherein the medicament discharge device comprises an aerosol medicament

container suitable for containing a propellant-based aerosol medicament formulation.

5. A medicament dispenser device according to claim 4, wherein the
5 dispensing mechanism comprises a metering valve.

6. A medicament dispenser device according to any of claims 1 to 3,
wherein the medicament discharge device comprises a pump dispenser for
10 pumped dispensing of medicament in fluid form.

7. A medicament dispenser device according to claim 6, wherein the
dispensing mechanism comprises a compression pump.

8. A medicament dispenser device according to any of claims 1 to 3,
15 wherein the medicament discharge device comprises a syringe dispenser for
injection of medicament in fluid form.

9. A medicament dispenser device according to any of claims 1 to 8,
wherein the user operable actuator is moveable transversely with respect to a
20 longitudinal axis defined by the medicament discharge device to apply an
actuating force directly or indirectly to the medicament container.

10. A medicament dispenser device according to any of claims 1 to 9,
wherein the user operable actuator is arranged to apply mechanical advantage.
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11. A medicament dispenser device according to claim 10, wherein the
user operable operator has a form selected from the group consisting of lever,
cam and screw form.

12. A medicament dispenser device according to either of claims 10 or 11, wherein the user operable actuator comprises at least one lever pivotally connecting to the housing.

5 13. A medicament dispenser device according to claim 12, wherein the lever acts on a transition piece connecting to a neck of the medicament container.

10 14. A medicament dispenser device according to claim 13, wherein the transition piece is in the form of a collar.

15 15. A medicament dispenser device according to any of claims 1 to 14, wherein the actuation indicator includes a display for displaying dose count information.

16. A medicament dispenser device according to any of claims 1 to 15, wherein the actuation indicator comprises an actuation sensor.

20 17. A medicament dispenser device according to claim 16, wherein the actuation sensor is sensitive to a stimulus selected from the group consisting of electro magnetic radiation, magnetic field, light, motion, temperature, pressure, sound, oxygen concentration, carbon dioxide concentration and moisture.

25 18. A medicament dispenser device according to either of claims 16 or 17, wherein the actuation indicator associates mechanically or electronically with the actuation sensor.

30 19. A medicament dispenser device according to any of claims 1 to 18, wherein the pre-load means is physically interposed between the user operable actuator and the medicament container.

20. A medicament dispenser device according to claim 19, wherein the pre-load means may comprises a step formed on the medicament container wherein the step is over-ridden when the pre-determined threshold force is applied to the user operable actuator.

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21. A medicament dispenser device according to claim 19, wherein the pre-load means comprises a step formed on the user operable actuator wherein the step is over-ridden when the pre-determined threshold force is applied to the user operable actuator.

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22. A medicament dispenser device according to claim 19, wherein the pre-load means comprises at least one detent formed on one of the medicament container or the user operable actuator and a recess formed on the other of the medicament container or the user operable actuator wherein the or each detent rides out of the recess when the pre-determined threshold force is applied to the user operable actuator.

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23. A medicament dispenser device according to any of claims 1 to 18, wherein the pre-load means is interposed between the housing and the medicament container.

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24. A medicament dispenser device according to claim 23, wherein the pre-load means comprises one or more detents formed on the medicament container for engagement with part of the housing, the or all of the detents being disengageable from the housing when the pre-determined threshold force is applied to the user operable actuator.

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25. A medicament dispenser device according to claim 23, wherein the pre-load means comprises one or more detents formed on the housing for engagement with part of the medicament container, the or all of the detents

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being disengageable from the medicament container when the pre-determined threshold force is applied to the user operable actuator.

26. A medicament dispenser device according to any of claims 1 to 18, wherein the pre-load means is interposed between the housing and the user operable actuator.

27. A medicament dispenser device according to claim 26, wherein the pre-load means comprises at least one detent formed on the housing for engagement with the user operable actuator, the or all of the detents being disengageable from the user operable actuator when the pre-determined threshold force is applied to the user operable actuator.

28. A medicament dispenser device according to claim 26, wherein the pre-load means comprises at least one detent formed on the user operable actuator for engagement with part of the housing, the or all of the detents being disengageable from the housing when the pre-determined threshold force is applied to the user operable actuator.

29. A medicament dispenser device according to any of claims 1 to 18, wherein the pre-load means defines a variable mechanical ratio.

30. A medicament dispenser device according to claim 29, wherein said variable mechanical ratio is defined by the profile of interaction of a surface of the user operable actuator with a follower element provided to the container or a fitting provided thereto.

31. A medicament dispenser device according to claim 29, wherein said variable mechanical ratio is defined by the profile of interaction of a surface of

the container or a fitting provided thereto with a follower element provided to the user operable actuator.

32. A medicament dispenser according to either of claims 30 or 31, wherein the variable mechanical ratio defines a 'two step' profile characterized by an initial high gradient and a subsequent lower gradient.

33. A medicament dispenser device according to claim 32, wherein the high and lower gradient profiles are linear.

34. A medicament dispenser device according to claim 32, wherein the high and lower gradient profiles are curved and have a gradual break point therebetween.

35. A medicament dispenser device according to claim 34, wherein the high and lower gradient profiles have part-circle forms.

36. A medicament dispenser device according to any of claims 1 to 35, additionally comprising force modifying means for modifying the force applied to the container by the finger operable means.

37. A medicament dispenser device according to claim 36, in which said force modifying means amplifies the force applied to the container by the user operable actuator.

38. A medicament dispenser device according to claim 37, in which the amplification is provided in a uniform manner.

39. A medicament dispenser device according to claim 38, in which the degree of amplification is from 1.5 to 10.

40. A medicament dispenser device according to any of claims 36 to 39, in which the force modifying means is integral with the user operable actuator.

5 41. A medicament dispenser device according to any of claims 36 to 39, in which the force modifying means is located between the user operable actuator and the container.

10 42. A medicament dispenser device according to any of claims 36 to 41, in which the force modifying means comprises a lever, cam or screw element.

15 43. A medicament dispenser device according to any of claims 36 to 42, in which the force modifying means acts once the pre-determined force has been applied to the finger operable means.

20 44. A medicament dispenser device according to claim 43, in which the force modifying means acts such that once the pre-determined force has been applied to the finger operable means the modified force applied to the container is relatively constant.

25 45. A medicament dispenser device according to claim 43, in which the force modifying means acts such that once the pre-determined force has been applied to the finger operable means the modified force applied to the container increases on a relatively constant basis.

30 46. A medicament dispenser device according to any of claims 36 to 45, in which the force modifying means additionally comprises a stop element.

47. A housing assembly for reversible receipt of a medicament discharge device, said medicament discharge device comprising a medicament container

for storing the medicament to be dispensed and a medicament dispensing mechanism for dispensing medicament from the container, the housing assembly comprising

- 5 a housing including a dispensing outlet for insertion into a body cavity;
- a user operable actuator moveable with respect to the medicament discharge device to apply an actuating force to the dispensing mechanism; and
- 10 an actuation indicator responsive to application of said actuating force,
- wherein a pre-load means is provided to said user operable actuator to prevent application of the actuating force to the dispensing mechanism and actuation indicator until a pre-determined threshold force is applied to the user operable
- 15 actuator.
48. A kit of parts comprising a housing assembly according to claim 47; and a medicament discharge device receivable thereby.
- 20 49. A medicament dispenser device comprising
- a housing including a dispensing outlet for insertion into a body cavity;
- within the housing, a medicament release device, the medicament release
- 25 device comprising a medicament container for storing the medicament to be dispensed and a medicament release mechanism for releasing medicament from the container to a release position within the housing;

an airflow generator moveably housed within the housing, said airflow generator means capable on actuation, of providing airflow to said release position for aerosolising said released medicament;

- 5 a user operable actuator moveable to apply an actuating force to the airflow generator; and

an actuation indicator responsive to application of said actuating force,

- 10 wherein a pre-load means is provided to said user operable actuator to prevent application of the actuating force to the airflow generator and actuation indicator until a pre-determined threshold force is applied to the user operable actuator.